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THE MORE IMPORTANT RECORDS FOR APRIL 1936

Within the next few days Brood X of the periodical cicada will be appearing in the Northern States and Brood XXII will be appearing in Louisiana and Mississippi. We wish to call the attention of our collaborators to the desirability of our receiving observations of this insect in as many definite localities as possible.

During the latter part of April, the Mormon cricket began hatching in enormous numbers in parts of Idaho and western Montana.

The army cutworm was seriously damaging alfalfa and small grain in Oklahoma and Colorado, and cotton in parts of Texas. Cutworms were also reported from a number of other States.

Several species of wireworms were reported as appearing in abnormal numbers in parts of Washington and the adults were reported as damaging fruit buds in California.

Chinch bug flights were reported about the middle of the month in Illinois. High winter mortality occurred in Oklahoma.

Considerable hessian fly infestation is reported from southeastern Kansas. The late fall brood was very materially reduced by the severe winter, but the early fall brood came through the winter with but little mortality.

Apple aphids are occurring in greater numbers locally in the northeastern part of the country than for the last few years. In the Pacific Northwest they are scarce.

The codling moth started pupating in the third week of the month in Delaware, and adults were observed in Georgia the middle of the month. In the East Central States pupation started the second week of the month and in the Great Basin was well under way the third week of the month.

The eastern tent caterpillar was hatching in considerable numbers throughout the New England, Middle Atlantic, South Atlantic, and lower Mississippi Valley States early in April. This insect appears to be moderately abundant throughout this area.

Pupation of the oriental fruit moth was practically completed in Delaware during the month and adults were observed in Virginia about the middle of the month. In Georgia, eggs began hatching during the second week in April.

For the first time since the Japanese beetle has been known to occur in the United States, this insect suffered considerable winter mortality in certain parts of the older infested areas.

The four-spotted tree cricket was damaging raspberries so seriously in the Lewiston district of Idaho that control measures were necessary.

Cold, wet weather in the Charleston district of South Carolina was followed by considerable injury by the seed corn maggot.

The tomato pinworm surviving the winter on old tomato plants is heavily infesting the new fields in the Santa Ana district of California.

Hundreds of acres of cabbage in Mississippi were plowed under on account of heavy cabbage aphid infestations.

A heavy infestation of forest tent caterpillar was reported from the southern part of Mississippi, sweet gum and oak being defoliated in four counties.

Larvae of Halisidota ingens Hy. Edw. are seriously damaging ponderosa pine in the Apache National Forest in Arizona.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

South Dakota. H. C. Severin (April): No eggs hatched yet out of doors. Brought in some eggs from two areas, one covered by snow throughout the winter, the other not so covered. Eggs in both lots have hatched in approximately the same numbers and at the same time in the laboratory.

MORMON CRICKET (Anabrus simplex Hald.)

Montana. A. L. Strand (April 22): The warm weather of the past 10 days has caused the hatching of Mormon crickets in large numbers in southern and western Montana.

Idaho. C. Wakeland (April 21): Mormon crickets began hatching in the districts near Boise March 15, and now are hatching in numbers at Riggins in Idaho County and near Mountain Home in Elmore County. After beginning to hatch they were held in check for 2 weeks by cold weather. The higher areas are later than normal and no hatching has been reported in eastern Idaho, but in the warmer, lower areas enormous hordes are now beginning to attack range vegetation.

CUTWORMS (Noctuidae)

Alabama. J. M. Robinson (April 21): Cutworms are very abundant, attacking vegetables, particularly during the last week of March and the first week of April.

Mississippi. C. Lyle (April 24): Cutworms have apparently caused more damage this spring than usual. Injury to cabbage, tomatoes, young beans, and other plants has been general.

Iowa. H. E. Jaques (April 24): Many cutworm larvae are in evidence.

Kansas. H. R. Bryson (April 7): Cutworms (Chorizagrotis auxiliaris Grote) are very plentiful in grass lands and wheat in Harper, Sumner, and Bourbon Counties. Most of them are army cutworms, but some small variegated cutworms (Lycophotia margaritosa saucia Hbn.) are present. Cutworms in general are not as plentiful as in the past two seasons.

Oklahoma. F. A. Fenton (April 20): The army cutworm (C. auxiliaris) caused serious injury to first-year alfalfa and oats in Alfalfa County.

Colorado. S. C. McCampbell (April 8): We have received reports from most of the counties of eastern Colorado of damage by C. auxiliaris; however, we have had a snow or two every week and very cold weather. (April 13): We are being besieged with reports from northeastern Colorado.

Texas. F. L. Thomas (April 22): On April 10 cutworms had destroyed almost 60 acres of cotton in Brazoria County.

R. E. McDonald (April 20): Cutworms are reported as damaging alfalfa in the southern end of the Mesilla Valley.

Utah. C. J. Sorenson (April 24): A few climbing cutworms are attacking peach trees.

California. C. S. Morley (April 3): Cutworms appeared to be very plentiful in vineyards in Kern County; however, all vineyardists used tanglefoot on their vines and prevented serious injury.

J. C. Elmore (April 2): Variegated cutworm (L. margaritosa saucia) is common on tomato vines near Niland, attacking fruit and foliage. Losses are not unusually heavy.

MOURNING-CLOAK BUTTERFLY (Hamadryas antiopa L.)

New Jersey. W. P. Yetter, Jr. (April 20): The first specimen of the mourning-cloak butterfly in spring flight was observed at Moorestown on March 15.

A CABBAGE BUTTERFLY (Pieris monuste L.)

Florida. H. T. Fernald (April 13): No evidence of migratory flight of P. monuste as yet at Orlando. Adults are scarce inland; slightly abundant on the west shore of the Indian River between Indian River City and Cocoa; quite abundant opposite Cocoa across Indian River (1 mile wide there) and increasingly abundant all the way out to the outer beach (approximately 10 miles by road; perhaps 5 miles air line). Abundant on eastern side near outer beach but without drift in any one direction as yet.

WIREWORMS (Elateridae)

Washington. M. C. Lane (April 20): At Prescott and Pendleton damage from Great Basin wireworm (Ludius noxius Hyslop) is showing up to a greater extent this year than normally, because of the extent of winter injury to wheat, resulting in a thin and weak stand.

M. C. Lane and H. P. Lanchester (April 22): Adults of the Pacific coast wireworm (Limonius canus Lec.), the sugar beet wireworm (L. californicus Mann.), and the western field wireworm (L. infuscatus Mots.) have been emerging and mating in unusually large numbers at Walla Walla. This intense activity resulted from the unseasonably warm weather of the past 2 weeks which has materially shortened the normal emergence period. Oviposition is taking place. Some damage by larvae to potato seed pieces has been noted.

California. C. S. Morley (April 3): Click beetles were found doing slight injury to young grapevines in the Arvin district, Kern County.

R. S. Wagner (April 13): Adults of L. canus are causing serious damage to unfolding buds of President plums grafted in 1935 to French prune stocks in a planting of 80 trees in the Kings River bottoms near Sanger. In many instances the entire bud was eaten.

WHITE GRUBS (Phyllophaga spp.)

Wisconsin. C. L. Fluke (April 20): No regular flight of June beetles has been observed to date. Several specimens of P. tristis Fab. have been collected at the ground surface during the few warm days of mid-April and one was found the last of March in Dane County.

Alabama. J. M. Robinson (April 21): The brown June bug (P. micans Knoch) has been emerging at night and returning to runways in the soil in the morning. They have become pests around lights on porches and in buildings.

Georgia. G. F. Moznette and S. O. Hill (April 14): Large numbers of May beetles have appeared in the vicinity of Americus and Albany during the week of April 14 and have been quite abundant since. The beetles have done considerable damage to the new growth on pecan trees.

T. L. Bissell (April 16): May beetles are now very abundant at lights at Griffin. They were first noted on April 13. Feeding has not been observed.

Mississippi. H. Gladney (April 24): May beetles are doing considerable damage along the Mississippi coast to Japanese persimmons and pecans.

Louisiana. B. A. Osterberger (April 23): During the entire month June bugs have been active on the warmer nights.

Kansas. H. R. Bryson (April 20): Population of white grubs not so heavy as usual following the year of beetle emergence.

Texas. F. L. Thomas (April 22): On April 13 the first record of P. submucida Lec. for the current season came from Dimmit County, collected by S. E. Jones.

JAPANESE BEETLE (Popillia japonica Newm.)

New Jersey. C. H. Hadley (April 23): Conditions during the winter of 1935-36 were such that for the first time since the beetle has been known to occur in the United States there has been considerable mortality of the grubs at certain places in the infested area, owing to the extremely cold weather, coupled with lack of a sufficient blanket of snow. However, the destruction of the grub population in the soil is not general or uniform throughout the infested area, but is most evident in southern New Jersey and eastern Pennsylvania.

Pennsylvania. R. M. Baker (April 22): From 1 to 12 larvae per square foot were found in grass roots in Cumberland County. No indication that the winter had killed larvae. The snow was deep over this section all winter.

COMMON RED SPIDER (Tetranychus telarius L.)

Virginia. H. G. Walker (April 21): The red spider continues to be relatively abundant in some strawberry fields at Norfolk and may cause serious injury under favorable weather conditions unless control measures are applied.

Mississippi. C. Lyle and assistants (April 24): Heavy infestations of red spiders have been observed during the past 15 days on azaleas and camellias at Moss Point. Red spiders are less abundant on camellias at Poplarville than they were last month, but they are fairly abundant on arborvitae in southwestern Mississippi.

Ohio. N. F. Howard (April 21): Hydrangeas in a greenhouse at Columbus were very heavily infested on April 4.

Kansas. H. R. Bryson (April 10): Large numbers of red spiders are present in northeastern Kansas.

Idaho. C. Wakeland (April 21): Common red spider emerged at Lewiston on April 15, where it was feeding on young mustard plants.

C E R E A L A N D F O R A G E - C R O P I N S E C T S

WHEAT

CHINCH BUG (Blissus leucopterus Say)

Indiana. C. Benton (April 17): No flight from hibernation quarters observed to date at Lafayette. Bugs were stirring in grass clumps on April 14 when the maximum air temperature reached 77° F., but on exposure to sunlight showed a tendency to hide rather than to fly. From 50 to 100 or more live bugs per clump of Andropogon could be found on that date.

Illinois. W. P. Flint (April 20): Flight was reported in central Illinois for the first time this year on April 14, with heavy flight on April 20. There has been considerable activity in the cover and some crawling out of the bugs from the overwintering shelters to nearby wheat fields.

Ohio. T. H. Parks (April 24): A survey made in five north-central counties shows an average of only two bugs per square foot of timothy clump. This is from one-third to one-half of the number found last fall and indicates a winter mortality of over 50 percent. From present indications, there will be no chinch bug outbreak this year in Ohio.

Iowa. H. E. Jaques (April 24): The chinch bug is sufficiently abundant in southeastern Iowa to threaten danger if conditions are favorable.

Kansas. H. R. Bryson (April 6): Not many chinch bugs have been found in clumps of grass at Wellington, according to E. G. Kelly. Up to this date none have entered the small grains. Very few bugs found in Bourbon County and in the vicinity of Manhattan, Riley County.

Oklahoma. F. A. Fenton (April 20): A spring survey from March 9 to 13 indicated that there was approximately 79.3 percent mortality of the chinch bug in Oklahoma and that the mortality in sorghum stubble was considerably greater than in bunch grass. An average of 3.1 bugs per square foot was found in sorghum stubble and 19 per square foot in bunch grass.

C. F. Stiles (April 22): Conditions during the past month have been favorable for chinch bug development.

HESSIAN FLY (Phytophaga destructor Say)

Indiana. W. B. Noble (April 17): Pupation of the hessian fly in the field began at Lafayette the last week in March. About 24 percent pupation by April 15. There has been no emergence to date. Apparently some of the earlier formed pupae were killed by the abnormally low temperatures early in April. (April 24): Field observations during the past few days give evidence of a very high winter mortality of the late fall brood in the area extending from Attica east to the Ohio line--much higher, in fact, than was indicated by earlier examinations. The practical elimination of this brood substantially reduces the danger of a severe spring outbreak in central Indiana. However, the early fall brood in volunteer and early sown fields, which reached the puparium stage well in advance of cold weather, suffered comparatively little mortality and may still be the source of considerable spring infestation.

Kansas. H. R. Bryson (April 8): Twenty-five counties in southeastern Kansas show considerable infestation. Some hessian fly was found last fall in Bourbon County but very little this spring. R. H. Painter, in a survey of Geary, Morris, Chase, Lyon, Coffey, and Osage Counties, found considerable variation in the infestations in these counties. In Chase and Neosho Counties wheat was heavily infested and a considerable amount of the wheat was killed by fly, wind, and dry weather.

FALSE WIREWORMS (Eleodes spp.)

Nebraska. M. H. Swenk (April 10): A Garden County correspondent reported on April 10 that the spring wheat in that vicinity was being destroyed by the plains false wireworm (E. opaca Say).

Kansas. H. R. Bryson (April 6): False wireworms seriously damaged some wheat fields last fall near Conway Springs. E. G. Kelly reports four fields abandoned near Wellington, and six at Anthony. E. suturalis Say adult was taken and E. opaca was plentiful at Anthony.

A FUNGUS GNAT (*Mycetophilidae*)

Indiana. J. J. Davis (April 26): Fungus gnats have been exceedingly abundant in wheat fields throughout central Indiana during the last 3 weeks, leading growers to believe that hessian flies were out in unusually large numbers. Many growers were ready to plow up their wheat fields, until they learned the true nature of the insects.

CORN

CORN EAR WORM (*Heliothis obsoleta* Fab.)

Louisiana. B. A. Osterberger (April 20): Slight damage has been noticed by corn ear worm to young corn in St. Mary and Iberia Parishes.

Texas. R. W. Moreland (April 11): At College Station two eggs were found per 100 plants on 1,500 plants of alfalfa and three eggs per 100 plants on 600 plants of Texas bluebonnet (*Lupinus subcarnosus*) examined during the week. No eggs were found on *L. texensis*.

SALT-MARSH CATERPILLAR (*Estigmene acraea* Drury)

Florida. J. R. Watson (April 23): Larvae were quite active in destroying corn in Manatee County. It has been somewhat in evidence in watermelon fields in Alachua County, but not nearly so injurious as it was 2 years ago.

CORN FLEA BEETLE (*Chaetocnema pulicaria* Melsh.)

Georgia. T. L. Bissell (April 21): Small field corn at Pomona, Spalding County, is severely attacked by this flea beetle, with as many as 10 beetles to the stalk. There is much feeding on the leaves, which is easily confused with frost injury.

SEED CORN BEETLE (*Agonoderus pallipes* Fab.)

Iowa. H. E. Jaques (April 24): The seed corn beetle, always quite abundant, seems unusually so this year in the southeastern part of the State.

ALFALFA

ALFALFA WEEVIL (*Hypera postica* Gyll.)

Utah. C. J. Sorenson (April 24): Adults of alfalfa weevil moderately abundant in Salt Lake Valley.

California. A. E. Michelbacher (April 21): In the San Francisco Bay area in two fields the average number of larvae collected per 100 sweeps of an insect net reached slightly more than 1,500, but no economic damage resulted. The amount of parasitization by *Bathyplectes curculionis* Thos. during this month has ranged from a little over 50 to more than 70 percent. In the Pleasanton district the greatest average number of larvae collected to 100 sweeps was 832,

with most fields showing a much lower count. Here parasitization has been close to 90 percent. In the San Joaquin Valley some very high weevil counts were made. At Patterson on March 31 the average number taken to 100 sweeps was 5,890. In this field some economic damage was done. On the same date near Vernalis one field showed an average count close to 2,500, but no economic damage resulted. Throughout this area the weevil population was the greatest yet encountered. Parasitization was very low and ranged from less than 1 percent to nearly 10 percent. The parasite has apparently become dispersed over most of the infested area.

LEAFHOPPERS (Cicadellidae)

Louisiana. B. A. Osterberger (April 23): Many undetermined leafhoppers have been found on alfalfa. Some yellowing of plants and girdling has been noticed at Baton Rouge.

TARNISHED PLANT BUG (Lygus pratensis L.)

Louisiana. B. A. Osterberger (April 23): The tarnished plant bug has been found in considerable numbers on alfalfa at the sugar station at Baton Rouge.

Kansas. H. R. Bryson (April 20): The tarnished plant bug is quite numerous at Manhattan.

A CRANE FLY (Tipula cunctans Say)

Kentucky. W. A. Price (April 25): Leather jackets (T. cunctans), 40 to the square foot, were found in a field of lespedeza at Mayfield. This field had been in lespedeza 4 years in succession.

VETCH

APHIDS (Aphidae)

North Carolina. C. H. Brannon (April 25): Vetch in peach orchards over a wide area in Scotland County is severely damaged by aphids.

SUGARCANE

SUGARCANE BORER (Diatraea saccharalis Fab.)

Louisiana. B. A. Osterberger (April 21): On April 21 cane borer adults were found at lights, and fresh eggs were collected at Franklin, Jeanerette, and New Iberia, but no Trichogramma minutum Riley have been found in any of the borer eggs collected.

SUGARCANE BEETLE (Euetheola rugiceps Lec.)

Louisiana. B. A. Osterberger (April 23): Ligyrus is doing considerable damage to the sugarcane in St. Mary Parish: Many "dead heart" stalks are found attacked. Several of the larger sugar planters are using trap lights in an effort to trap the beetle and some are employing several men who dig for them around injured canes, paying so much per beetle.

F R U I T I N S E C T S

TARNISHED PLANT BUG (Lygus pratensis L.)

Virginia. W. J. Schoene (April 23): Tarnished plant bugs were found very numerous in peach orchards in the Crozet section, sometimes a dozen or more on a tree.

Washington. E. J. Newcomer (April 21): At Yakima very little injury to fruit buds by tarnished plant bug has been reported, although bugs are present in the orchards. Up to April 10 the weather was cold and windy, which prevented activity. Since that time it has been unseasonably warm, and the buds have opened so rapidly that injury has been confined to individual buds rather than to clusters.

APPLE

APPLE APHIDS (Aphidae)

Connecticut. P. Garman (April 23): Apple aphids, Anuraphis roseus Baker, and Aphis pomi DeG., found in the field in New Haven County on April 15.

New York. N. Y. State Coll. Agr. News Letter (April): In the Hudson River Valley the apple grain aphid (Rhopalosiphum prunifoliae Fitch) started hatching March 25, the apple aphid the last 3 days in March, and the rosy apple aphid between April 1 and 6. Infestation by the grain and rosy aphids may be somewhat heavier than it has been for 2 or 3 years. In the Lake district the grain and rosy aphids commenced to hatch about the middle of April.

New Jersey. M. Kostal (April 9): The rosy apple aphid and the green apple aphid were exceptionally abundant on expanding apple buds at Morganville on April 5. The infestation indicates that it will be the heaviest for the past 5 years.

Pennsylvania. H. E. Hodgekiss (April 23): Eggs of the rosy apple aphid began hatching in Adams, Berks, Bucks, Philadelphia, York, Lancaster, Lebanon, Juniata, Franklin, Dauphin, and Cumberland Counties on April 1. In Chester and Delaware Counties they were hatched on March 25 and 26. In the east-central counties this species appeared on April 14 to 17. In the northeastern area eggs had hatched between March 31 and April 15. The green apple aphid and the grain aphid were present on partly

dormant buds several days in advance of the rosy aphid. The green apple aphid is the most abundant, the grain aphids not so abundant, and the rosy aphid infestation of moderate intensity. No aphids have as yet hatched in the northern tier of counties. Syrphid eggs are moderately abundant in all orchards.

Kentucky. W. A. Price (April 25): Green and grain aphids are now abundant in orchards in the central part of the State.

Michigan. Ray Hutson (April 20): Aphids are hatching in southwestern Michigan and the few specimens seen indicate that R. prunifoliae is the predominant species.

Washington. E. J. Newcomer (April 21): The various aphids attacking apple seem to be very scarce at Yakima this spring. It is probable that the low temperatures (3° to 5° F.) occurring about the first of last November interfered with the deposition of winter eggs, in the case of the rosy and green apple aphids, and also killed most of the woolly aphids (Eriogoma lanigerum Hausm.) that were above ground. The parasite Aphelinus mali Hald., however, was not entirely killed out, and adults have been emerging during the last few days.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Indiana. J. J. Davis (April 26): Winter mortality of the San Jose scale has been very high, but in many localities in the State where the 17-year cicada is abundant, insecticide control has been advised because the egg scars left by the cicadas will act as protective places for the scales.

Michigan. Ray Hutson (April 20): Infestations are quite spotted. High winter mortality observed in the vicinity of Benton Harbor, Lansing, and Muskegon. Specimens from South Haven showed only normal mortality.

Idaho. C. Wakeland (April 21): Owing to very cold weather late in the spring and a sudden change to midsummer temperatures, little dormant spraying was done in orchards and cherry trees broke into blossom before dormant sprays could be applied. Undoubtedly this situation will cause heavy increase of San Jose scale this year, for the insect is known to have wintered successfully.

CODLING MOTH (Carpocapsa pomonella L.)

Delaware. L. A. Stearns (April 20): Two percent of overwintered codling moth larvae pupated on this date.

Georgia. C. H. Alden (April 21): The first codling moth was caught in the experimental orchard bait pots at Cornelia on April 16. To date only 3 additional moths have been trapped. The weather has been too cold for much moth emergence to date and there has been no egg deposition.

Indiana. L. F. Steiner (April 23): Pupae of codling moth were first observed by A. J. Ackerman at Elberfeld, on April 10, and by S. A. Summerland at Bicknell, 50 miles farther north, on April 13. 50 percent of 51 surviving individuals found on and under trees at Elberfeld April 15 and 16 had pupated, but only 40 percent of 43 found on April 23 at Bicknell had transformed.

Illinois. W. P. Flint (April): Pupations of codling moth started in southern Illinois sometime prior to April 14, probably about the 10th.

Idaho. C. Wakeland (April 21): Codling moth larvae were beginning to pupate at Lewiston on April 15.

Utah. C. J. Sorenson (April 24): In Salt Lake Valley 12.6 percent of 127 overwintered larvae had pupated on April 20 and 24.6 percent of 326 overwintered larvae were found dead in hibernaculae April 13 to 20.

Washington. E. J. Newcomer (April 21): Low temperatures of 30 to 50 F. about the first of last November at Yakima had no apparent effect on codling moth larvae that were already established in cocoons for the winter, and temperatures during the winter were not low enough to cause any mortality. Pupation has been taking place for some time and moths should be emerging very soon.

EASTERN TENT CATERPILLAR (Malacosoma americana Fab.)

New England. E. P. Felt (April 24): The apple tent caterpillar has hatched in southern New England, and its abundance in a number of localities is indicated by the numerous small webs.

New Hampshire. L. C. Glover (April 25): The eastern tent caterpillar was observed hatching in Durham on April 14.

Connecticut. P. Garman (April 23): Tent caterpillars are abundant in many orchards in New Haven County, the larvae feeding on the unopened buds in some places. Hatching began on April 4 but cool weather has retarded their development.

New York. N. Y. State Coll. Agr. News Letter (April): Eggs were observed hatching the last of March and the first of April in the Hudson River Valley, and by the last of April tents were quite numerous.

R. D. Glasgow (April 27): The eastern tent caterpillar was hatching at New Rochelle on April 9, and at Albany during the past week. This insect promises to be fairly abundant again this year in parts of New York, even in some places where its great abundance during the past 2 years might have been expected to precede an abrupt decline to relatively insignificant numbers.

Delaware. L. A. Stearns (March 30): First hatching of eastern tent caterpillar was observed on March 30 at Newark.

New Jersey. T. L. Guyton (April 20): Eastern tent caterpillar is numerous on apple and wild cherry at Bound Brook; also noted on apple at Lebanon.

H. W. Allen (April 20): Eastern tent caterpillar not nearly so abundant in Burlington County as during 1935. A moderate number of tents are in evidence, but many clumps of black cherry have none. Less abundant on other host plants.

M. Kostal (April 9): On April 5 newly hatched larvae were noticed on apple trees at Morganville. Judging from the numbers of egg masses, the insect will again be present in large numbers.

Pennsylvania. R. M. Baker (April 21): Tents of the eastern tent caterpillar are about a week old. The larvae are feeding on unfolding apple leaves at Harrisburg, resulting in medium damage. Eggs began hatching at Berwick on April 9. They are very abundant.

H. E. Hodgkiss (April 23): The eastern tent caterpillar was forming webs in Adams County on April 1. In Mifflin County on April 13 eggs started hatching and 4 days later hatching was general in the county, which is close to the center of the State. The infestation appears to be general, as it was in 1935.

A. B. Champlain (April 19): Observed in Dauphin County on seedling apple, leaf buds first unfolding. The caterpillars are just hatching, and their nests are very small. Some larvae are clustered on opening leaf buds.

South Carolina. F. Sherman (April 20): Tent caterpillar is common on wild cherry. Larvae are now an inch long.

Georgia. O. I. Snapp (April 17): Recently hatched larvae were observed on wild cherry trees on March 31 at Fort Valley. The infestation is only moderate being considerably lighter than last year. Practically full-grown larvae were observed on April 17.

T. L. Bissell (April 8): One colony of small tent caterpillar larvae, apparently M. americana, observed on wild cherry at Experiment today. (April 23): A few full-grown caterpillars have been taken on wild plum bushes since April 18.

Mississippi. C. Lyle and assistants (April 24): Specimens of M. americana were collected at Jackson on March 31. Slight infestations on plum and peach were noted at Kosciusko, McAdams, and Durant.

Alabama. J. M. Robinson (April 21): Tent caterpillars have been active in trees during the latter part of March and early April.

APPLE FLEA WEEVIL (Orchestes pallicornis Say)

Indiana. A. J. Ackerman (March 31): Adults of the apple flea weevil are active on apple buds at Elberfeld.

FLAT-HEADED APPLE TREE BORER (Chrysobothris femorata Oliv.)

Nebraska. M. H. Swenk (April 20): Reports of infestation of fruit and shade trees, including cherry, apple, cottonwood, elm, hackberry, boxelder, silver maple, etc., continued to be received during the period March 21 to April 20. These new complaints came from the southeastern one-third of the State.

Oklahoma. F. A. Fenton (April 20): The flat-headed apple tree borer is still in the larval stage.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Connecticut. P. Garman (April): Eggs of the European red mite present in many orchards. None have been hatched at the present time.

New York. N. Y. State Coll. Agr. News Letter (April): Eggs of the European red mite were first observed hatching on April 16 in Rockland County and on April 24 in Dutchess County.

PEACH

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Delaware. L. A. Stearns (April 17): First overwintered adults of plum curculio jarred from peach trees at Bridgeville today.

Virginia. W. J. Schoene (April 21): The first curculios were taken at Crozet on April 8, and on April 14 the first individuals were taken from orchards in the Roanoke section, and were occurring in peach orchards in considerable numbers by April 21.

South Carolina. F. Sherman (April 20): D. Dunavan reports finding crescent cuts numerous on cultivated plum.

Georgia. O. I. Snapp (April 1): The peak of appearance of the curculio from hibernation at Fort Valley occurred on March 29, and by March 30 the beetles had reached the center of the orchards and were disseminated throughout the orchards. Shucks were being shed from a few peaches on March 31. Therefore, the dissemination of the curculio was unusually late this year in comparison with the development of the fruit. The appearance of adult curculios from hibernation has not been as heavy as anticipated. (April 8): The first eggs of the season were found today. The most advanced egg was about 4 days old. Very few eggs have been deposited to date, and none have hatched. (April 15): Although the peak of appearance of adults from hibernation in the Fort Valley area occurred on March 29, unusually late, very few eggs were deposited

until the week beginning April 13. Rain was recorded on 8 of the first 10 days of April for a total of 7.93 inches for that period. These rains with high winds and cool weather prevented oviposition of most of the adults until the time indicated above. (April 27): Larvae began leaving peach drops today, which is 13 days later than the first emergence last year.

T. L. Bissell (April 18): The curculio continues to be scarce on peach trees at Experiment. On April 16, 14 weevils were jarred from a small clump of wild plum and only 4 weevils from 21 peach trees. (April 23): Curculios continue to be found in small numbers on peach trees but on April 16 and 22 they were numerous on wild plum.

C. H. Alden (April 21): Curculios commenced emerging on March 23 in the Cornelia section and have been emerging in moderate numbers since that time. The highest catch in any one morning has been 25 curculios jarred from 10 trees. Commercial growers in the middle Georgia sections (Thomaston and Monticello) have reported catching over 2,000 in one morning's jarring operations.

G. F. Mozzette and S. O. Hill (April 22): Half-grown larvae of the plum curculio at Albany were found in green peaches from a half inch to an inch in size.

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Delaware. L. A. Stearns (April 20): Seventy-eight percent of overwintered larvae pupated on April 20 and the first spring-brood moth emerged on the 15th.

Virginia. W. J. Schoene (April 20): Adult peach moths were taken at Crozet on April 16, and at Hollins and Blacksburg on April 20.

Georgia and Alabama. O. I. Snapp (April 16): The first twig injury of the season was observed at Fort Valley today. The oldest larvae in these twigs were about 3 days old. Eggs began to hatch April 13, which is about the usual time. Larvae at least one-half grown were reported on April 12 at Prattville, Ala., which is in about the same latitude as Fort Valley. The dates of first twig injury at Fort Valley other years are as follows: April 10, 1925; April 20, 1926; April 1, 1927; April 25, 1928; April 4, 1929; April 29, 1930; April 22, 1931; May 17, 1932; April 20, 1933; April 24, 1934; April 3, 1935.

C. H. Alden (April 21): First moth caught in bait pots at Cornelia, Ga., on April 15. Very few have emerged so far. No egg deposition.

PEACH TWIG BORER (Anarsia lineatella Zell.)

Utah. C. J. Sorenson (April 24): Peach twig borers are feeding in blossoms and leaf buds of peaches in Davis County.

CLOVER MITE (Bryobia praetiosa Koch)

Utah. C. J. Sorenson (April 24): Brown mites are active on unsprayed peach trees in Davis County.

PEAR

PEAR PSYLLA (Psyllia pyricola Foerst.)

New York. N. Y. State Coll. Agr. News Letter (April): The pear psylla is present and laying eggs in normal abundance in the Hudson River Valley, but in the Lake district the weather has been unfavorable for egg laying.

PEAR MIDGE (Contarinia pyrivora Riley)

New York. N. Y. State Coll. Agr. News Letter (April): The first flies were observed on April 23 in Columbia and Dutchess Counties.

PEAR THRIPS (Taeniothrips inconsequens Uzel)

New York. N. Y. State Coll. Agr. News Letter (April): Pear thrips were first observed from March 29 to 31 in the Hudson River Valley. Since that time the increase was slight and no definite swarming had been noted by the middle of the month.

CHERRY

BLACK CHERRY APHID (Myzus cerasi Fab.)

New York. N. Y. State Coll. Agr. News Letter (April): The black cherry aphid began hatching in the Hudson River Valley the last of March. In the Lake district in Orleans and Monroe Counties aphids were first observed on the buds the third week of April.

Montana. A. L. Strand (April 22): The black cherry aphid is present in very reduced numbers this spring in the Flathead sweet cherry district. Evidently extremely low temperatures in October of last year had considerable effect in causing this reduction.

CHERRY CASE BEARER (Coleophora pruniella Clem.)

Wisconsin. C. L. Fluke (April 20): The severely cold weather of the past winter apparently did not injure many of the wintering cases. Twigs brought into the laboratory from Door County showed almost as many live cases as in former years.

PLUM

RUSTY PLUM APHID (Hysteroneura setariae Thos.)

Mississippi. C. Lyle (April 24): Specimens of the rusty plum aphid with the report that they were seriously damaging plum trees were received from Belzoni on April 17.

RASPBERRY

FOUR-SPOTTED TREE CRICKET (Oecanthus nigricornis quadripunctatus Beut.)

Idaho. C. Wakeland (April 21): The four-spotted tree cricket is causing serious damage to red raspberry canes at Lewiston and growers are preparing to spray.

GRAPE

GRAPE LEAF FOLDER (Desmia funeralis Hbn.)

California. H. C. Donohoe and G. H. Kaloostian (April 13): The grape leaf folder has been reported as doing serious damage to several varieties of grapes in the Kings River bottoms near Sanger for the past 4 years. Examinations of soil in a planting on April 11 indicated a high population of overwintering pupae. Adult emergence is just commencing.

GRAPE ROOT BORER (Paranthrene polistiformis Harr.)

Kentucky. W. A. Price (April 25): The grapevine root borer has damaged many vines in a vineyard at Lexington. On removing the vines on April 20, larvae in both the first and second year growth were found.

A WEEVIL (Glyptoscelis squamulata Crotch)

California. H. C. Donohoe (April 13): Adults are abundant, feeding on new shoots of Sultana grapevines in the Kings River bottoms near Sanger. On several other varieties in the immediate vicinity the beetles were scarce.

GOOSEBERRY

IMPORTED CURRANT WORM (Pteronidea ribesii Scop.)

Iowa. H. E. Jaques (April 24): Eggs of the imported currant worm are showing up on gooseberries in the southeastern part of the State.

PECAN

PECAN NUT WORM (Acrobasis caryae Grote)

Florida. G. F. Moznette and S. O. Hill (April 21): The larva of this insect

formerly known as the pecan nut casebearer, was found to be working in the shoots of pecan on April 21. Indications are that it will be about as abundant in the Monticello pecan section as last season, when from 10 to 30 percent of the nuts were destroyed during May and June. From present indications, the pecan crop will be exceedingly light in the Monticello section this year, and the damage which this insect will cause will no doubt appear considerable to the growers.

Texas. C. B. Nickels (April 8): An examination of several hundred pecan trees near Crystal City and San Antonio on March 31, April 1 and 2, indicated an extremely severe infestation of the pecan nut case bearer.

PECAN LEAF CASE BEARER (Acrobasis juglandis LeB.)

Georgia and Florida. G. F. Moznette and S. O. Hill (April 13): The larvae of the pecan leaf case bearer were found to be infesting the buds and new growth in large numbers at Albany, Ga., and Monticello, Fla., and causing considerable damage.

HICKORY SHUCK WORM (Laspeyresia caryana Fitch)

Georgia. G. F. Moznette and S. O. Hill (April): The moths of the hickory shuck worm have been emerging in considerable numbers from the overwintering stage within the shucks on the ground at Albany, but the emergence is subsiding somewhat since April 15.

APHIDS (Aphididae)

Georgia. T. L. Bissell (April 26): At Griffin adult stem mothers of black pecan aphid, Melanocallis caryaefoliae Davis, are common, few young. I see no leaf injury. Found one adult stem mother of the black margined aphid, Monellia costalis Fitch. As is usual at this time of year, adult stem mothers of black spotted aphid, Monellia nigropunctata Granovsky, and their young are abundant.

Texas. C. B. Nickels (April 25): The giant hickory aphid was unusually abundant on pecan and walnut in Texas during April. Reports were received that this insect was abundant near the following localities: Austin, Brady, Brownwood, Burnet, Gatesville, Georgetown, Lampasas, Lometa, San Antonio, and San Saba. On a small percentage of the trees all of the branches were nearly completely encircled by the giant hickory aphid; however, on a majority of the trees the insect was found in groups which extended approximately 6-12 inches lengthwise of the twigs. To obtain information about this insect from one to six people called every day during the period April 5 to 25. At present hickory aphids are more abundant than at any other time during this month.

A SPITTLE BUG (Clastoptera obtusa Say)

Florida. G. F. Moznette and S. O. Hill (April 21): This spittle bug is appearing in considerable numbers on the new growth of the pecan in the Monticello section.

CITRUS

FRUIT FLIES (Anastrepha spp.)

Texas. P. A. Hoidale (April 2): Traps continue to catch adults both in Texas groves and in the Mexican brush. During the last 2 weeks 5 adult A. ludens Loew were taken in Brooks County, and 21 in the lower Rio Grande Valley, while 10 were taken in the brush south of Reynosa and Matamoros, Mexico. In all these locations 52 A. sp. "Y", 53 A. pallens Coq., and 16 Toxotrypana curvicauda Gerst. were also trapped. (April 16): During the past two weeks trapping operations have been carried on as usual and during this period 15 A. ludens were taken in the lower Rio Grande Valley and 7 in northern Hidalgo and Starr Counties. Six of these flies were taken in the brush.

GREEN CITRUS APHID (Aphis spiraecola Patch)

Florida. J. R. Watson (April 23): The green citrus aphid is quite scarce for this time of year as the spring flush of growth of citrus has hardened up and there is very little food for it.

H. T. Fernald (April 22): Citrus aphids scarce at Orlando.

CITRUS WHITEFLY (Dialeurodes citri Riley & How.)

Florida. H. T. Fernald (April 22): Citrus whitefly rather less in evidence than usual at Orlando, although moderately abundant. Adult maximum abundance occurred about March 30.

Mississippi. C. Lyle (April 24): The citrus whitefly is reported rather abundant on its usual hosts by inspectors in the southern half of the State during the past 2 weeks.

FLOWER THRIPS (Frankliniella tritici Fitch)

Arizona. C. D. Lebert (April 23): The flower thrips has been observed to be quite abundant on citrus during the past month at Phoenix, and considerable injury has occurred on roses. No citrus injury noticeable as yet.

SIX-SPOTTED MITE (Tetranychus sexmaculatus Riley)

Florida. J. R. Watson (April 23): The weather, having turned dry during the last 2 weeks, has given marked impetus to the six-spotted mite, and is responsible for the heaviest infestation we have seen in several years. This mite is particularly injurious to grapefruit.

H. Spencer (April 28): The six-spotted mite is quite prevalent in the orange and grapefruit trees near Orlando. Many of the leaves show the characteristic yellow, distorted spots, and in some few instances the trees have been defoliated.

CITRUS RED MITE (Paratetranychus citri McG.)

Florida. J. R. Watson (April 23): Some purple mites were found on citrus, mixed with the six-spotted mites.

California. H. J. Ryan (April 22): Infestations were on the increase in Los Angeles County in March, and considerable damage is being caused in citrus groves.

CITRUS RUST MITE (Phyllocoptes oleivorus Ashm.)

Florida. J. R. Watson (April 23): The weather having turned dry during the last 2 weeks, has given marked impetus to rust mites on citrus.

T R U C K - C R O P I N S E C T S

VEGETABLE WEEVIL (Listroderes obliquus Klug)

Georgia. T. L. Bissell (April 18): There is an error in the April 1 Bulletin (p. 40) in my note concerning this insect. The pupae found on March 28 at Clarkston were all alive and not "mostly dead." I meant to say the turnips were dead from cold. Pupae collected and caged that day have all transformed to adults during the period April 1-15. Material from other sources is now in the pupal state. No further scouting has been done.

Alabama. J. M. Robinson (April 21): Adults emerged in large numbers the last week in March and first 10 days in April. They came out in gardens and fields where turnips and winter greens were growing last winter, causing considerable damage to tomato plants set near the gardens.

Mississippi. C. Lyle (April 24): The vegetable weevil is apparently more abundant than last year. Heavy injury to gardens and truck crops in the Crystal Springs-Hazlehurst trucking section has been reported.

Louisiana. B. A. Osterberger (April 23): Vegetable weevils have been active in many parts of the State, attacking principally vegetable and truck crops.

Texas. F. L. Thomas (April 22): Reported from Gillespie County on April 2.

California. H. J. Ryan (April 22): The vegetable weevil was found this year, as in 1935, generally distributed south and southeast of Los Angeles. Heavy larval damage occurred along the edge of a celery field at Lomita.

R. E. Campbell (April 15): To the list of localities where the vegetable weevil is found in California, which we forwarded to you in June 1935, the following may be added: Chula Vista, Bonita, Spring Valley, East San Diego, and National City, in San Diego County; and East Santa Barbara, Montecito, and West Santa Barbara, in Santa Barbara County. (April 23): Citrus seedlings in a nursery at East Whittier, Los Angeles County, are being defoliated by the adults. Larvae bred on mustard cover crop, which has been plowed under. The adults are emerging in great numbers and, finding little food, are attacking the citrus seedlings. They are abundant in nearby citrus orchards and feeding on oranges which drop to the ground, 17 beetles being collected on one orange.

SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata Fab.)

South Carolina. F. Sherman (April 20): Spotted melon beetles are out in numbers on various plants. One report indicated abundance on young cucumber plants.

Georgia. T. L. Bissell (April 23): Cucumber beetles were very abundant on peach trees at Experiment the latter part of March, when they were in blossom, averaging about eight to the tree. Diggings have been made for larvae in legumes and grass for a month but none were found until April 20, when a second-instar larva was taken from roots of vetch, and the next day a first-instar larva was taken on corn. Beetles have laid eggs in the insectary since February 29.

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

South Carolina. F. Sherman (April 20): D. Dunavan reports having seen active specimens of the striped melon beetle.

Georgia. T. L. Bissell (April 20): One striped cucumber beetle found on peach tree today at Experiment. One found at light on April 17, the first of the season.

SEED CORN MAGGOT (Hylemyia cilicrura Rond.)

Virginia. H. G. Walker (April 21): Adults of the seed corn maggot are rather abundant in the field near Norfolk, but very little injury has been reported.

South Carolina. W. J. Reid, Jr. (April 14): The seed corn maggot caused serious injury to the germinating seed of experimental plantings of cucumbers near Charleston. The damage necessitated replanting the crops. The germinating seed of an experimental planting of sweet corn at the Truck Experiment Station, Charleston, was found to be infested, many of the seeds having been destroyed. The unusual degree of injury caused by the insect is attributed to the delayed germination of the seed resulting from cold, wet soil.

TARNISHED PLANT BUG (Lygus pratensis L.)

Colorado. S. C. McCampbell (April 27): The tarnished plant bug is causing severe injury to spinach, cabbage, and cauliflower around Pueblo and Canon City. In one instance the bugs were abundant on rhubarb.

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Virginia. H. G. Walker (April 21): The Colorado potato beetle is rather abundant in many fields of potatoes at Norfolk where they have deposited quite a few eggs. No young larvae have been found to date.

South Carolina. F. Sherman (April 20): Potato beetle not yet seen. Early planted potatoes are now well up, some plants 6 inches high at Clemson.

Georgia. T. L. Bissell (April 19): On March 28 the first beetle from hibernation was found in a cage at Experiment over dead leaves and grass. On April 14 a few beetles were noticed on potatoes and on April 15 one egg mass was found.

Florida. J. R. Watson (April 23): The Colorado potato beetle was quite injurious in the northern part of Alachua County. Dusting was quite general.

Alabama. J. M. Robinson (April 21): The Colorado potato beetle is moderately abundant, requiring protective measures for the potatoes.

Mississippi. C. Lyle and assistants (April 24): The Colorado potato beetle is fairly abundant on tomatoes in the field in Copiah and Lincoln Counties. This beetle was first observed at Ocean Springs on April 4. It is reported to be abundant at Moss Point but unusually scarce at Poplarville.

Louisiana. B. A. Osterborger (April 23): Potato bug is numerous over the State. Many growers are dusting.

Texas. F. L. Thomas (April 22): On April 20 the Colorado potato beetle was causing considerable injury to large fields of potatoes in Wharton and Cameron Counties.

FLEA BEETLES (Epitrix spp.)

Virginia. H. G. Walker (April 21): The tobacco flea beetle (E. parvula Fab.) and the potato flea beetle (E. cucumeris Harr.) are present in the Norfolk district, but have not done much feeding on potatoes.

CORN EAR WORM (Heliothis obsoleta Fab.)

Utah. H. L. Blood (1936): The tomato fruit worm has been exceedingly abundant and troublesome for the past 2 years. This insect has been held responsible for a 10 percent reduction in tomato production, resulting in a loss of approximately \$404,000. This figure is not representative of the total loss suffered by the industry from the abundance of the worm. An increase in production costs, with a proportionate reduction in the net income of the processors, would not be reflected in the reduction in total value of the crop to the industry on a production basis and, consequently, such a loss would necessarily augment the production losses from the ravages of the insect. Under the Federal Food and Drugs Act, filthy or decayed products are prohibited, and tomato products containing worms or worm fragments come within this restriction. In order to comply with this requirement the processors have had to adopt a more careful sorting and trimming than had previously been employed. Meeting this requirement has added a cost estimated at \$85,000 and increased the loss to the State resulting from the fruit worm to approximately \$495,000, or about 20 percent of the total loss to the industry in Utah from diseases and other causes.

California. J. C. Elmore (April 2-7): A survey of tomato fields at El Centro, Brawley, Westmoreland, and Niland failed to locate any corn ear worms on tomato. Near Santa Ana on April 9, seven moths were collected at lights between 8 and 9 p.m. They laid eggs under outdoor conditions at Alhambra.

BEET ARMYWORM(Laphygma exigua Hbn.)

California. J. C. Elmore (April 2): Beet armyworm is common on tomato vines near Niland, attacking foliage and fruit, but losses are not unusually heavy.

TOMATO PINWORM (Gnorimoschema lycopersicella Busck)

Virginia. H. G. Walker (April 21): The tomato pinworm was rather abundant late last summer in a greenhouse near Norfolk where late fall and early spring crops of tomatoes were being grown. As a result, a fall crop of tomatoes was not planted last year, and so far no evidence of pinworms has appeared in the spring crop, which was planted in January.

California. J. C. Elmore (April 7): Tomato fields which have survived the winter in the early tomato growing areas near Santa Ana, Orange County, are very heavily infested. There are hundreds of larvae per plant. New fields near the old ones are already heavily infested.

BEANS

MEXICAN BEAN BEETLE (Epilachna varivestis Muls.)

Ohio. N. F. Howard (April 9): Survival of the Mexican bean beetle at Columbus remains between 2 and 3 percent, as reported a month ago.

Mississippi. L. J. Goodgame (April 24): Mexican bean beetles found in the soil in Monroe County early in April. No beetles have yet been observed this season on beans.

BEAN LEAF BEETLE (Cerotoma trifurcata Forst.)

Virginia. H. G. Walker (April 21): The bean leaf beetle is beginning to emerge from hibernation. Several beetles have been collected in bean fields at Norfolk, but very little feeding has occurred to date.

Mississippi. D. W. Grimes (April 24): Medium injury to beans at Durant and McAdams.

Texas. F. L. Thomas (April 22): J. N. Roney reports that in Wharton County on April 16 the bean leaf beetle had almost completely destroyed about 10 rows of string beans.

PEAS

PEA APHID (Illinoia pisi Kalt.)

Virginia. H. G. Walker (April 21): The pea aphid is from scarce to relatively abundant on alfalfa, but very scarce on peas in the vicinity of Norfolk.

Mississippi. C. Lyle (April 24): The pea aphid is reported as less abundant than usual on Austrian winter peas at Poplarville. Examination of pea fields in the Crystal Springs-Hazlehurst trucking section on April 4 failed to show any infestation.

California. R. E. Campbell (April 15): Most of the pea fields of Santa Clara County are moderately infested. Cold weather during the first part of April checked multiplication, but recent warm weather has caused a build-up which will undoubtedly be sufficient to cause injury before harvest time.

CABBAGE

IMPORTED CABBAGE WORM (Ascia rapae L.)

Virginia. H. G. Walker (April 21): Butterflies are moderately abundant at Norfolk. Eggs and small worms are present but very scarce.

South Carolina. F. Sherman (April 20): White cabbage butterflies have been in flight several weeks.

Georgia. T. L. Bissell (April 18): Cabbage at Experiment is lightly infested with small worms.

Florida. H. T. Fernald (April 22): Cabbage butterflies are scarcer than usual at this time of year at Orlando.

Mississippi. C. Lyle and assistants (April 24): The imported cabbage worm is very abundant at Aberdeen, Poplarville, and Moss Point, and slight injury reported in Lincoln and Copiah Counties.

Ohio. B. J. Landis (April 21): The first adult of the imported cabbage worm was observed in the field today.

CABBAGE LOOPER (Autographa brassicae Riley)

Louisiana. B. A. Osterberger (April 23): Cabbage loopers are more numerous and eggs are easily found. So far no Trichogramma parasites have been found in the eggs collected.

California. J. C. Elmore (April 2): A looper, either A. brassicae or A. californica Speyer, was common on tomato vines near Niland, attacking fruit and foliage.

CABBAGE APHID (Brevicoryne brassicae L.)

Virginia. H. G. Walker (April 21): The cabbage aphid is very scarce at Norfolk except in a few fields where the aphids were brought in with the plants from the South.

South Carolina. J. A. Berly (April 20): The cabbage aphid is prevalent on cabbage in gardens at Clemson.

Georgia. T. L. Bissell (April 18): Aphids are scarce on cabbage at Experiment.

Mississippi. C. Lyle and assistants (April 24): The cabbage aphid is apparently more abundant than usual in most parts of Mississippi and has caused very heavy damage in the Crystal Springs-Hazlehurst trucking section. It is reported that hundreds of acres were plowed up on account of damage. Only medium injury is reported on home-grown plants, the heaviest loss occurring on imported plants. A heavy infestation was noted on collards at Poplarville late in March.

HARLEQUIN BUG (Murgantia histrionica Hahn)

Georgia. T. L. Bissell (April 18): Comparatively few harlequin bugs have been seen this year on collard at Experiment.

Alabama. J. M. Robinson (April 21): The harlequin cabbage bug continues to increase in abundance, coming from its hibernation places. These bugs are attacking turnips and other greens in gardens.

Mississippi. C. Lyle (April 24): The harlequin cabbage bug has been noted by all inspectors but was reported to be numerous only at Poplarville. The county agent at Hattiesburg reported serious damage to cabbage and turnips on April 4.

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

Washington. M. C. Lane and E. W. Jones (April 16): This beetle was found in destructive numbers in several asparagus fields in the Walla Walla Valley. Last year only a few scattered infestations were reported. It is evidently gaining a foothold in the rapidly expanding asparagus districts of the Walla Walla Valley.

California. R. E. Campbell (April 15): Several asparagus fields in Los Angeles County are badly infested with asparagus beetles. Many new stalks are ruined by deposits of eggs.

SQUASH

SQUASH BUG (Anasa tristis DeG.)

Idaho. C. Wakeland (April 21): The squash bug has spread throughout southwestern Idaho and has extended its range eastward as far as King Hill. Another infestation occurs in Franklin County, in the southeastern part of the State.

SPINACH

GREEN PEACH APHID (Myzus persicae Sulz.)

Virginia. H. G. Walker (April 21): The spinach aphid (M. persicae) has been very scarce or entirely absent from Norfolk since the fungus disease killed off the heavy infestation last fall.

BEETS

BEET LEAFHOPPER (Eutettix tenellus Baker)

Texas. D. W. De Long and R. K. Fletcher (April 22): A brief survey to determine the presence, abundance, and distribution of the beet leafhopper in the Winter Garden section of Texas was made from April 14 to 18. Beet leafhopper was found in Zavala, Dimmit, Maverick, and Webb Counties. Spinach was found to be badly diseased. Curly top reported.

California. S. Lockwood (April 30): Inspection of a sugar beet field in Fresno County on April 27 showed the sugar beet leafhopper to be especially numerous in the field. Counts showed approximately five leafhoppers per plant.

APHIDS (Aphididae)

New Mexico. R. E. McDonald (April 20): J. N. Crisler writes that aphids are doing serious damage to sugar beets in the lower Mesilla Valley. Some of the beets may have to be plowed up as a result of injury by this insect.

TOBACCO

TOBACCO FLEA BEETLE (Epitrix parvula Fab.)

North Carolina. C. H. Brannon (April 27): Many tobacco beds have been severely damaged this year. Practically all beds show evidence of some feeding.

SLUGS (Mollusca)

North Carolina. C. H. Brannon (April 15): Slugs have been very destructive to tobacco beds in Robeson and Columbus Counties.

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

Oklahoma. C. F. Stiles (April 22): Up to and including April 16 there had not been any boll weevil activity in the hibernation cages at Eufaula, where we have 25,550 weevils in hibernation. So far very little cotton has been planted.

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Puerto Rico. L. C. Fife (April 14): At Aguadilla about 50 plants of soca cotton bearing many mature green bolls were found growing in a field of planta cotton that was just beginning to bloom. Of 93 mature green bolls examined, 50, or 55.6 percent, were found to be infested with pink bollworm larvae in all stages of development. Two cotton fields planted December 15, 1935, at Isabela were heavily infested. Of 87 mature green bolls examined from one of these fields, 47, or 54 percent, were infested. In the other field 30 bolls were examined and 15, or 50 percent, were infested. Blooms were also heavily infested in this field. Cotton was planted in these and adjacent fields last year. The old cotton plants of the 1935 crop were destroyed only a week or so before the planting of the 1936 crop. In some adjacent fields the old plants were cut down and piled, but had not been burned. An examination of the seed cotton in these fields showed that it was heavily infested with the pink bollworm (long-cycle larvae). These facts clearly explain why the infestation is so high in these fields. Another field examined at Isabela showed an infestation of 10 percent. The heaviest infestation on the northern coast during 1935 occurred at Camuy; however, no cotton plantings in this locality are bearing mature green bolls at present. Two hundred mature green bolls were examined from two fields at Quebradillas on April 6. The infestations in these fields were 2 and 4 percent, respectively. Only one small experimental plot of Meade cotton was grown at Arecibo last year. During the present season, possibly 700 acres are grown in this locality. Two hundred mature green bolls from two fields planted December 15, 1935, were examined but neither field was found infested. At Hatillo, mature green bolls from two different fields were examined. Only one of these fields was found to be infested.

COTTON APHID (Aphis gossypii Glov.)

Arizona. T. P. Cassidy and T. C. Barber (April 18): In the vicinity of Buckeye in the Salt River Valley cotton lice are very prevalent on the foliage of sprouting stubble cotton.

Puerto Rico. L. C. Fife (April 14): The cotton aphid was found in most of the plantings on the northern coast, but no serious damage was observed.

FIELD CRICKET (Gryllus assimilis Fab.)

Mexico. C. S. Rude (April 14): Field crickets continued to be a serious pest in the cotton fields of the Laguna district of Mexico. In some places the cotton is recovering from the cricket damage but in others replanting will be necessary. This is a serious situation, as there is not enough seed in the Laguna for replanting and, with exchange and financial conditions as they are, it will be very difficult to import the cotton seed.

COTTON BLISTER MITE (Eriophyes gossypii Bks.)

Puerto Rico. L. C. Fife (April 14): Young cotton plants 12 inches high were found to be heavily infested with the West Indian blister mite (E. gossypii) in one field at Isabela on April 6. Many of the fruiting branches on these plants have been destroyed. This infestation originated from infested new growth on old cotton plants of the 1935 crop that had not been destroyed in an adjacent field.

F O R E S T A N D S H A D E - T R E E I N S E C T S

CANKERWORMS (Geometridae)

Connecticut. B. H. Walden (April 24): Eggs of Alsophila pometaria Harr. are abundant in New Haven County. No indications of hatching.

New York. N. Y. State Coll. Agr. News Letter (April 13): Several cankerworm egg masses have been observed in Greene County.

New Jersey. H. W. Allen (April 20): A considerable number of egg clusters, apparently of fall cankerworms, have been noted in the vicinity of Moorestown. As this insect was not present in destructive numbers in this vicinity last year, the presence of considerable numbers of egg clusters may indicate the probability of an appreciable infestation during the coming season.

Michigan. R. Hutson (April 20): Eggs of cankerworms are abundant about Lansing, Grand Rapids, and Owosso.

FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.)

Mississippi. C. Lyle (April 24): A heavy infestation of the forest tent caterpillar is occurring again this year in the extreme southern part of the State. Sweetgum and oak trees, especially, are being defoliated in Pearl River, Hancock, Harrison, and Marion Counties. Many people are alarmed at the enormous numbers of the insect.

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

New Jersey. H. W. Allen (April 20): There is somewhat heavier infestation of bagworm than usual in evidence in southern New Jersey. Many bags are present in thickets of locust, on young sycamores in street plantings, and occasionally on ornamental evergreens. A considerable portion of the female bags contain no healthy eggs, so the infestation of caterpillars may not be heavier than usual.

Louisiana. B. A. Osterberger (April 20): A few very small bagworms were received from Covington.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

Pennsylvania. E. P. Felt (April 24): Adults were found wintering in large numbers in a building in the Philadelphia district.

Idaho. C. Wakeland (April 21): The elm leaf beetle has spread throughout southwestern Idaho and reached eastward as far as Gooding. Northward in the State it is known to occur in Moscow.

California. C. S. Morley (April 3): Elm leaf beetles have been found feeding on elm leaves in several places within the city limits of Bakersfield during the last 2 weeks. Elm trees were not sprayed last year, which resulted in many overwintering beetles that threaten the foliage of elm trees this year.

EUROPEAN ELM SCALE (Gossyparia spuria Mod.)

Illinois. W. P. Flint (April 20): The cold weather of the winter apparently had only very little effect on the European elm scale. Recent examinations of this insect have failed to show more than the normal winter mortality.

Idaho. C. Wakeland (April 21): European elm scale was heavily killed last winter by temperatures in northern Idaho.

EUROPEAN FRUIT LECANIUM (Lecanium corni Bouche)

Oklahoma. F. A. Fenton (April 20): The European fruit Lecanium has proved to be far more destructive this year than last. Most of the damage appears to be on elm trees, particularly the American elm. At present the females have nearly completed egg deposition.

HEMLOCK

A NEEDLE MINER (Recurvaria apictripunctella Clem.)

Connecticut. G. H. Plumb (April 13): The insect seems to be fairly abundant on hemlock at Hamden. Larvae of both brown and green colors were found, and pupae were found 3 days later. They eat only the under surface of some needles and mine in others.

LARCH

LARCH CASE BEARER (Coleophora laricella Hbn.)

Vermont. H. L. Bailey (April 25): Cases of the larch case bearer found moderately abundant on trees in Glover, Orleans County, and very abundant in Cabot, Washington County, on April 23.

Connecticut. E. P. Felt (April 24): Larch case bearers have commenced feeding on the young needles and are locally abundant.

LOCUST

A BORER (Agrilus difficilis Gory)

Colorado. J. A. Beal (April 7): The honeylocust (Gleditsia triacanthos), a tree widely used in early windbreak plantings and in the new plantings because of its supposed immunity to insect injury, has, during the past summer, been heavily attacked and killed in many plantings.

MAPLE

TERRAPIN SCALE (Lecanium nigrofasciatum Perg.)

Connecticut and Pennsylvania. E. P. Felt (April 24): The black banded scale was quite abundant on maple in the Philadelphia district and also at Bridgeport, Conn.

OAK

A BORER (Aegeria mellinipennis Bdv.)

California. H. J. Ryan (April 22): This borer was found to be causing considerable damage to two large California live oaks on a residential property in San Marino.

AN OAK SCALE (Lecanium quercifex Fitch)

Mississippi. C. Lyle (April 24): Heavy infestations of the oak lecanium were reported during the month from Utica, Meehan, Poplarville, and Union.

PINE

A TUSSOCK MOTH (Halisidota ingens Hy. Edw.)

Arizona. M. W. Blackman (March 26): These caterpillars are apparently doing serious damage to Ponderosa pine in the Apache National Forest. The conditions as described seem rather alarming. (Determined by C. Heinrich.)

WHITE-PINE WEEVIL (Pissodes strobi Peck)

Pennsylvania. E. P. Felt (April 24): Some injury to Austrian pine occurred in the Philadelphia area, though in New England this insect shows a marked preference for white pine.

A MIDGE (Diplosis inopis O. S.)

Connecticut. G. H. Plumb (April 20): A light-to-moderate infestation has been observed on Scotch pine in New Hartford. Where the larvae were working near the tips of the twigs, the bud clusters appeared to be affected. In most cases the lesions were formed about the base of a needle, although this was not always true.

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Connecticut. W. E. Britton (April 24): Specimens received from Bristol and Wethersfield, where they were taken on Mugho pine.

Nebraska. M. H. Swenk (April 8): On April 8 some spruce trees in Sioux County were reported to be infested with the pine leaf scale.

WILLOW

BEAKED WILLOW GALL (Phytophaga rigida O.S.)

New Jersey. E. P. Felt (April 24): Reported as somewhat abundant on willows at Palisades Park.

I N S E C T S A F F E C T I N G G R E E N H O U S E
A N D O R N A M E N T A L P L A N T S

CUBAN-LAUREL THRIPS (Gynaikothrips uzeli Zimm.)

Florida. J. R. Watson (April 23): Complaints were received of the depredations of the Cuban-laurel thrips from Sarasota and Babson Park. This is a very serious pest of Ficus nitida and F. religiosa, making the growing of these ornamentals almost impossible. Because the thrips curls up the young leaves very tightly it is impossible to get at it with an effective spray.

OYSTER -SHELL SCALE (Lepidosaphes ulmi L.)

District of Columbia. W. Middleton (April 2): Oyster-shell scale collected on elm trees in Washington. (Identified by H. Morrison.)

Indiana. J. J. Davis (April 26): Apparently the winter had little harmful effect on the oyster-shell scale.

Idaho. C. Wakeland (April 21): Oyster-shell scale was heavily killed by temperature of the last winter in northern Idaho.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

Mississippi. C. Lyle (April 24): On April 17 the county agent of Hattiesburg sent specimens of cottony cushion scale which, he stated, was very abundant on hedges in that city. This insect also occurs on some properties in Laurel. Ladybeetles are being distributed as rapidly as possible.

AZALEA

AZALEA SCALE (Eriococcus azaleae Comst.)

Mississippi. C. Lyle (April 24): Infestations of the azalea scale have been found during the past month at Pascagoula and Meridian. In both cases the infestations were traced to infested plants from a nursery in Mobile. Every effort is being made to clean up the infestations and prevent the spread.

DOGWOOD

DOGWOOD CLUB GALL (Lasioptera clavula Beutm.)

Connecticut. E. P. Felt (April 24): The dogwood club gall was found to be somewhat abundant on newly transplanted flowering dogwood.

JUNIPER

JUNIPER WEBWORM (Dichomeris marginellus Fab.)

Connecticut. E. P. Felt (April 24): The juniper webworm was somewhat abundant on Irish juniper at New Canaan.

LILAC

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Connecticut and New York. E. P. Felt (April 24): White peach scale was found in some numbers on lilac at Darien, Conn., and Huntington, Long Island, N.Y.

ROSE

APHIDS (Aphidae)

Texas. R. E. McDonald (April 20): Aphids are reported as doing considerable damage to roses in the El Paso and Mesilla Valleys.

INSECTS ATTACKING MAN AND
DOMESTIC ANIMALS

MAN

HUMAN FLEA (Pulex irritans L.)

Indiana and Missouri. E. C. Cushing (April 25): Reports received from several localities in Indiana and Missouri indicate that the human flea is beginning to appear and has already become abundant enough to cause considerable annoyance in dwellings.

BROWN SALT-MARSH MOSQUITO (Aedes cantator Coq.)

Delaware. L. A. Stearns (April 15): Larvae and pupae of this species are abundant in water holes on salt marsh near Odessa.

CLUSTER FLY (Pollenia rudis Fab.)

Ohio. N. F. Howard (April 21): Very abundant in a house at Worthington during February and March.

Indiana. J. J. Davis (April 26): The cluster, or attic, fly was frequently reported from the northern half of the State during March and the early part of April, as being very annoying in homes.

Michigan. Ray Hutson (April 20): The cluster fly has been reported from Oxford, Delta, Dimondale, and Charlotte, as causing annoyance in houses.

Wisconsin. C. L. Fluke (April 20): There is practically no insect activity except appearances of large numbers of cluster flies.

TROPICAL RAT MITE (Liponyssus bacoti Hirst)

Texas. R. E. McDonald (April 11): Mites taken from a bedroom in San Antonio on April 6 have been identified as the tropical rat mite.

CATTLE

TRUE SCREW WORM (Cochliomyia americana C. & P.)

Texas. E. C. Cushing (April 25): A survey of Jackson, Matagorda, and Brazoria Counties on April 2, by W. J. Spicer, shows that screw worms have not yet become active in this section of Texas this season. Most of the infestations in these three counties this season have been due to Phormia spp.

CATTLE GRUBS (Hypoderma spp.)

Illinois. E. C. Cushing (April 25): A scarcity of ox warble grubs was reported in the vicinity of Galesburg.

Minnesota and Iowa. E. C. Cushing (April 25): Surveys made by R. W. Wells and H. O. Schroeder on April 9, 10, and 11 in southeastern Minnesota and northeastern Iowa show infestations of animals to be very light in these areas. Several hundred head of cattle were examined and grubs were very rare in mature animals. The yearlings and 2-year-olds carried a few, the largest number found in a single animal being 10.

Kansas. H. R. Bryson (April 6): Cattle observed running from heel flies at Anthony and Wellington. Reported running in March by one stockman near Manhattan. In Bourbon County heel flies were seen chasing cattle about the middle of March.

A HORSEFLY (Tabanus sp.)

Texas. E. C. Cushing (April 25): W. J. Spicer, screw worm scout, reports on April 2 a rather severe outbreak of a small tabanid in the wooded section of Brazoria County. He states that cattle have been considerably annoyed by this pest since about March 15.

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus Nitz.)

Kansas. H. R. Bryson (April 7): The broad-nosed ox louse very abundant in many herds in Harper County. Many farmers are requesting remedies.

LONE STAR TICK (Amblyomma americanum L.)

Mississippi. H. Gladney (April 24): Specimens of this tick were collected in Jackson County. The ticks were so numerous in the yard that a person would soon be covered with them.

DEER

DEER BOTFLY (Cephenomyia pratti Hunter)

Utah. G. F. Knowlton and C. F. Smith (April 7): An examination of a series of dead and very much weakened deer in the vicinity of Logan showed most of those examined to be heavily infested with bot maggots in the gular pouches. Many deer are dying from starvation, probably aided by excessive infestation of parasites.

DOG

AMERICAN DOG TICK (Dermacentor variabilis Say)

Maryland and Virginia. E. C. Cushing (April 25): Several infestations of dogs by the American dog tick have been reported from points in Maryland and Virginia near Washington, D. C.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Reticulitermes spp.)

- Connecticut. N. Turner and M. P. Zappe (April 24): Fifteen samples of winged termites (R. flavipes Kol.) were received for identification and 16 infested buildings inspected during the past month. A random sample survey of the State made during the winter showed that about 25 percent of all buildings inspected were infested, and about 30 percent of all wooden buildings showed the presence of termites. The buildings were of varying age and construction.
- New York. R. D. Glasgow (April 27): During the past 6 weeks we have identified termites swarming into the interior of houses at Albany, Schenectady, and Mount Vernon.
- Pennsylvania. R. M. Baker (April 21): Many reports of termite damage are coming in from scattered localities throughout most of the State.
- Delaware. L. A. Stearns (April 8): Specimens of injury to house structure at Hockessin examined; termites present.
- Ohio. T. H. Parks (April 24): Swarming of termites did not occur until about the middle of April, about 3 weeks later than usual. Judging from the reduced number of calls for aid, compared with those received during the past 4 years, termites have suffered from severe winter temperatures, along with many other insects.
- Indiana. J. J. Davis (April 26): The usual large numbers of inquiries about termites have been received. Swarming forms first made their appearance in January and migrations are still being reported.
- Illinois. W. P. Flint (April 20): Swarms have been appearing at many points in central Illinois during the last 3 weeks.
- Kentucky. W. Price (April 25): Termites, as usual, are the subject of many inquiries this spring. The first swarms were noticed in Lexington on March 2.
- Nebraska. M. H. Swenk (April 17): On March 26 a report was received of an infestation of R. tibialis Bks. around a Douglas County house, and on April 17 a report of them about the roots of trees near the foundation of a Gage County house.
- Kansas. H. R. Bryson (April 6): The usual numbers of inquiries about control of termites have been received, also reports of injury from Wellington, Manhattan, and other localities.
- Oklahoma. C. F. Stiles (April 22): Numerous flights of the sexed forms of termites have been observed in Payne, Ottawa, Haskell, Jefferson, and Pontotoc Counties.

ANTS (Formicidae)

New York. R. D. Glasgow (April 27): During the past 6 weeks we have identified carpenter ants swarming into houses at Millbrook, Loudonville, Schenectady, and Albany.

Nebraska. M. H. Swenk (April 20): Reports of the presence of the basement ant (Lasius interjectus Mayr) around the foundations of houses in Douglas County were received during the period March 21 to April 20.

Oklahoma. F. A. Fenton (April 20): A number of inquiries have been received on control of household ants.

Mississippi. C. Lyle (April 24): Fire ants (Solenopsis xyloni McCook) have caused trouble in several places during the month. Inspector J. E. Lee reports several complaints of damage to clothes by this ant.

Utah. G. F. Knowlton (April 11): Ants are very troublesome in a home at Logan.

INDIAN-MEAL MOTH (Plodia interpunctella Hbn.)

California. H. C. Donohoe (April 6): Samples of stored 1935 crop, unprocessed seedless raisins from a storage at Kingsburg on February 25 averaged less than 175 larvae per ton. Similar samples in March 1935 before adult emergence averaged approximately 750 per ton.

DRIED FRUIT MOTH (Vitula serratilineella Rag.)

California. H. C. Donohoe (April 4): Unprocessed 1935 crop seedless raisins in storage at Kingsburg, were found slightly infested by larvae of the dried fruit moth during February. This is the first record of raisin infestation by this species in the San Joaquin Valley within the past 5 years. (April 27): Adults of the spring brood were more abundant than normally in a packing house in Napa on April 16. They were more than 20 times as abundant as those of the raisin moth, which is usually predominant.

RAISIN MOTH (Ephestia figulilella Greg.)

Arizona. H. C. Donohoe (April 4): Examination of miscellaneous larvae found infesting dates in the Experimental Date Garden at Tempe, collected by P. Simmons and D. F. Barnes in November 1935, yielded one raisin moth larva. This is the first record of this insect in the field in fruit in any area outside the State of California.

California. H. C. Donohoe (April 4): Studies of winter mortality in soil of raisin moth in the vicinity of a raisin storage at Kingsburg indicate that, at the start of spring pupation the last of March, mortality in continuously wet soil approximated 100 percent; in that only occasionally moistened, over 70 percent; and in dry, protected soil, no more than 30 percent. In the wet soil the increase in mortality was greatest during February, a period of excess rainfall. Over 150 samples of

unprocessed, stored, 1935-crop raisins collected at Kingsburg on February 25, yielded an average infestation of approximately 6,400 live raisin moth larvae per ton, these having survived the winter. A similar survey in March 1935 indicated a survival of 1,100 per ton.

A PYRALID (Ephestioides nigrella Hulst)

California. H. C. Donohoe (April 4): Samples of stored, unprocessed 1935-crop seedless raisins, collected at Kingsburg on February 25, contained light infestation by larvae. Although adults are frequently encountered about raisin storages early in the spring, this is the first definite natural host record for this species.

A PYRALID (Aphomia gularis Zell.)

California. H. C. Donohoe (April 27): Adults of the spring brood are emerging in prune storages in San Jose. They are more abundant than hitherto noted, and larval cocoons indicate an unusually high overwintering population in two of four packing plants visited on April 18.

PEA WEEVIL (Bruchus pisorum L.)

Idaho. C. Wakeland (April 21): At Moscow about one-third of the pea weevils in the most favorable positions overwintered successfully, according to a report by T. A. Brindley. Weevils in cages placed in Weather Bureau kiosks survived at Buhl, Twin Falls, Jerome, Rupert, Bliss, Pocatello, and Burley. In 14 other locations where cages were placed mortality in cages was complete.

TENEBRIONIDS (Blapstinus spp.)

California. D. F. Barnes and H. C. Donohoe (April 13): During the past winter the relatively rare beetle, B. sulcatus Lec., has been taken in large numbers beneath timbers, in the soil, and in raisin trash about a stack of stored 1935 raisins at Kingsburg.

D. F. Barnes and C. K. Fisher (April 29): Migration of adults of both sexes of B. rufipes Csy. by flight as well as by crawling was observed March 19 in Fresno County. This is the first observation we have made of the flight of this species. Females containing eggs were first collected on April 16.

DRIED FRUIT BEETLE (Carpophilus hemipterus L.)

California. D. F. Barnes (April 29): These beetles were taken throughout the winter in traps baited with fermenting dried peaches and set in a fig orchard in Fresno County. With the exception of about 1 month (December 16 to January 20) they were caught in traps in an area of grain land several miles from known supplies of food.

INSECT CONDITIONS IN PUERTO RICO FOR THE SPRING OF 1936

By
 G. M. Wolcott

Since the middle of December, less than 2 inches of rain has fallen in Puerto Rico--much less than the normal rainfall for this time of year. The effect on certain insects has been very noticeable. The tobacco leaf miner (Gnorimoschema operculella Zell.) is destructively abundant in tobacco-growing districts that ordinarily escape injury entirely.

The effect of the weather on scale insects is also very noticeable, especially in citrus groves of such rugged contour that entomogenous fungi ordinarily can be depended on for commercial control. On some papaya trees that had been sprayed with miscible oils to control the West Indian peach scale (Aulacaspis pentagona Targ.), what ordinarily would be commercial control was obtained, but even a very small survival caused complete reinfestation 2 or 3 months later.

The yellow sugarcane aphid (Sipha flava Forbes), is generally supposed to be more or less effectively controlled by heavy rainfall. This winter and spring, when there has been practically no rainfall, the drought seems to have been effective in preventing even the beginning of field infestations, as none has been reported. An extended search in the Isabela district failed to disclose any.

The lima bean pod borer (Maruca testulalis Geyer) was destructively abundant in lima and snap beans at Yauco and Isabela last fall. In a lima bean plot at Isabela, from which samples have been harvested this late winter and spring, not a single caterpillar has been found. During the winter, a light infestation by Fundella cistipennis Dyar was noted. A normally heavy infestation by Etiella zinckenella Treit. developed this spring.

The onion thrips (Thrips tabaci Lind.) has entirely destroyed many onion plantings.